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Multinational Experiment 3 was the third event in a series of United States Joint Forces Command (USJFCOM) multinational experiments. Multinational Experiment 3 was a process-refinement experiment whose goal was to build on the lessons learned from Multinational Limited Objective Experiments I and II, and to continue exploring concepts and supporting tools for effects-based planning. The following three objectives were examined in Multinational Experiment 3: 1. Develop and assess processes to support coalition and NATO Response Force effects-based planning 2. Develop and assess organizations to support coalition and NATO Response Force effects-based planning. 3. Identify technology requirements to support coalition and NATO Response Force effects-based planning.

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MULTINATIONAL EXPERIMENT 3
(MNE 3)
FINAL REPORT

April 2004

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EXECUTIVE SUMMARY

Multinational Experiment 3 was the third event in a series of United States Joint Forces Command (USJFCOM) multinational experiments. Multinational Experiment 3 was a process-refinement experiment whose goal was to build on the lessons learned from Multinational Limited Objective Experiments I and II, and to continue exploring concepts and supporting tools for effects-based planning. Results will assist the development of future processes, organizations, and technologies at the operational and joint task force level of command. Additionally, Multinational Experiment 3 provided the participating nations an opportunity to examine issues associated with operational net assessment, Coalition Interagency Coordination Group, coalition intelligence, surveillance, and reconnaissance, multinational information sharing, logistics, coalition based health services support, information operations, and knowledge management.[1] The North Atlantic Treaty Organization (NATO) also examined concepts associated with their NATO Response Force.

Results of multinational experimentation will support further development of a standing joint force headquarters and will provide data for information sharing, multilevel security, and collaborative operational net assessment development to both the NATO Concept Development and Experimentation Working Group and to the Multinational Interoperability Council Working Group. Multinational Experiment 3 participants included Australia, Canada, France, Germany, the United Kingdom, the United States, and NATO. The United States, with USJFCOM, Joint Experimentation (J9) as the executive agent, led this event.

Multinational Experiment 3 was a worldwide distributed experiment with USJFCOM and key coalition players situated at the USJFCOM Distributed Continuous Experiment Environment facility located in Suffolk, VA and other coalition players participating from their national experimentation facilities. NATO utilized its Castlegate, Germany facility. The dedicated efforts of an international coalition of engineers and designers through months of planning, spiral development, and testing culminated in the most technically successful distributed multinational experimentation event conducted at USJFCOM to date.

The scenario for Multinational Experiment 3 was set in 2004 Afghanistan utilizing real-world data and scripted vignettes reflecting possible future developments in the area. This report contains a more detailed description of the experiment construct and scenario.

The following three objectives were examined in Multinational Experiment 3:

1. Develop and assess **processes** to support coalition and NATO Response Force effects-based planning.

[1] A more detailed explanation of all concepts experimented on may be found within the J9 Knowledge Management Portal http://www.jfcom.mil/about/abt_j9.htm.

2. Develop and assess **organizations** to support coalition and NATO Response Force effects-based planning.
3. Identify **technology** requirements to support coalition and NATO Response Force effects-based planning.

Key findings from Multinational Experiment 3 were:

1. The effects-based planning concept has the potential to make the coalition task force and NATO Response Force more effective instruments of power. However, the effects-based planning concept as developed for Multinational Experiment 3 is not operationally mature and requires further refinement.
2. Players stated that the best features of the effects-based planning process were:
   a. It forced military planners to think in terms of effects, which expanded alternative ways to achieve objectives beyond military actions
   b. Collaboration brought out the best ideas from a collective thought process.
3. Players stated the most difficult parts of the Multinational Experiment 3 effects-based planning process were:
   a. The complexity of the process inhibiting thought and analysis
   b. Confusing terminology
   c. Lack of an integrated tool suite.
4. There is a need to create a coalition logistics structure and plan as a coalition, not as a group of individual nations.
5. The Coalition Interagency Coordination Group brings a valuable civilian perspective to military planners, the coalition task force staff, and command group that is essential to an effective effects-based planning process.
6. Contributions from subject matter experts such as Coalition Interagency Coordination Group, medical, and information operations need to be integrated in the operational net assessment.
7. The staff organization should be driven by effects-based planning process requirements.
8. Leadership in a coalition collaborative information environment requires different skills than those required in today's command and control environment.
9. Effects-based planning calls for an integrated suite of tools to support distributed collaborative planning as well as tools specifically designed to support the effects-based planning process.

A significant element of warfighting experimentation is the participation of senior concept developers - a select group of former general and flag officers and civilian equivalents. These individuals participate in a variety of activities as a source of experience and knowledge that contributes to the growing understanding of concepts being examined during the experiment. Senior concept developers identified three overarching, emergent themes from the experiment:

1. The effects-based approach to coalition planning in a collaborative information environment is essential and challenging – but doable. It poses new and significant interoperability challenges with promising opportunities.

2. The observations gleaned from this experiment have greater value and credibility because the effects-based planning that was accomplished used a real-world scenario.
3. The use of an Afghanistan scenario emphasized that stability operations are inherently multinational and interagency and require a common doctrine.

Additional detail on senior concept developer participation within Multinational Experiment 3 is contained in Appendix B.

Lessons learned from this experiment will be taken forward into future USJFCOM and participant nation experiments. Multinational experimentation will continue to be a critical element of USJFCOM's joint concept development and experimentation program. The body of data collected over three preceding multinational experiments as well as insights from an even larger body of USJFCOM and multinational experiments will guide the next experiment – Multinational Experiment 4.

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SECTION 1: EXPERIMENT OVERVIEW

A. PURPOSE

Multinational Experiment 3 (MNE 3) was the third experiment in the multinational series. Multinational Limited Objective Experiment (MN LOE) I, conducted in November 2001, examined the issues associated with how a combined joint force headquarters would plan operations within a distributed collaborative information environment (CIE) with coalition partners. MN LOE II examined the issues associated with development of a multinational operational net assessment (ONA) while examining issues associated with coalition multinational information sharing (MNIS). The next MNE will incorporate the lessons from MN LOE I and II, and MNE 3 and specifically address effects-based operations (EBO) and command and control (C2). This series of experiments will feed the concept development and prototype paths, contributing to USJFCOM's transformation strategy (See Figure 1). In addition, elements of the experiment will be exploited by the partner nations and NATO as part of their own experimentation and development programs.

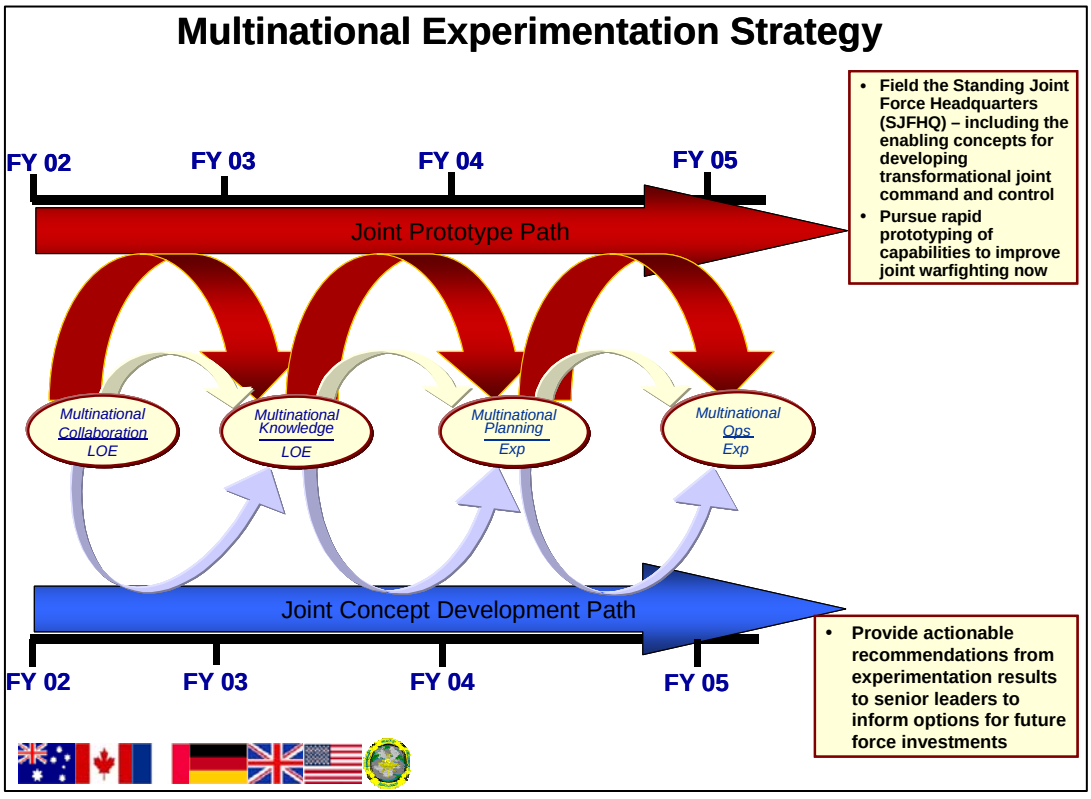

Figure 1: Two-Path Architecture

B. EXPERIMENTAL SCOPE

This experiment was conducted to identify and assess issues associated with how an ad hoc coalition and NATO conduct EBO. The experiment concentrated on the effects-based planning (EBP) process associated with EBO. The experiment results will:

- Support national standing joint force headquarters development efforts.
- Apprise concept development and experimentation (CDE) efforts and the working groups of the Multinational Interoperability Council.
- Support individual aims of the participant nations and NATO.

Three objectives were examined during this MNE. A scenario-driven situation was used to assess the ability of coalition nations and the NATO Response Force (NRF) to:

- Develop and assess processes to support coalition and NRF EBP.
- Develop and assess organizations to support coalition and NRF EBP.
- Identify technology requirements to support coalition and NRF EBP.

C. LIMITATIONS

During the planning of the experiment, there were design considerations that would influence the conduct of the experiment and the results.

- Experiment goals were ambitious due to the first time integration of a highly complex process, organization, and new technology.
- The experiment used 8 hours of operational play per day instead of 24 hours.
- MNE 3 was a single trial experiment; however, it is just one piece of a larger experimentation plan conducted by USJFCOM concerning these concepts.
- Participant training and knowledge of the concepts was less than envisaged upon fielding of the concepts.
- Training and rehearsal intended to occur during the experiment validation event (Rock Drill) did not happen as planned. Instead the time was used to complete the development of tactics, techniques, and procedures (TTP) for the process.
- Component and higher-level command play was limited to white cell responses.

During experiment execution, limitations emerged that influenced experiment play and subsequent analysis.

- Disconnects and gaps between steps in the planning process were not adequately resolved prior to experiment start.
- TTP stated what needed to be done but not how to complete tasks.
- It was unclear how the supporting concepts would be integrated into the planning process.
- Players came to the experiment with different perceptions of what a command-led process should be.
- Players had to spend time during Week 0, intended for a walk-through of the process, for team-building and concept of operations briefings.

- Players were too inexperienced with the boards, centers, and cells, which impacted negatively on the conduct of the EBP process.
- Players had no prior exposure to the EBP planning tool before Week 0.

Consequently, players were attempting to perform unfamiliar tasking in a new organization with immature tools at the start of Week 1. Players spent much of Week 1 figuring out how to perform the process instead of actually performing it. They had less time to execute the process, and had to rapidly produce products before proceeding to the next step. This resulted in products being produced that were either incomplete or did not possess the necessary fidelity for use in subsequent process steps.

Despite these limitations, useful insights were gained as to the strengths and weaknesses of the processes, organization, and technologies played in the experiment.

D. PARTICIPANTS AND LOCATIONS

The Combined Federated Battle Laboratories (CFBL) Network, a dedicated wide-area network, provided connectivity for MNE 3. Specific participation facility locations included:

Participant	**Location**
Australia	1. Defence Science and Technology Organisation, Fern Hill Park, Canberra, ACT
Canada	1. Canadian Forces Experimentation Centre, Shirley's Bay Detachment, Ottawa
France	1. CIADIOS, Taverny AB (BA 921), Taverny
Germany	1. Bundeswehr Military Intelligence Center (BMIC) Grafschaft-Gelsdorf 2. Bundeswehr Center for Analyses and Studies – OR Division, Ottobrunn 3. Bundeswehr Operations Command, Potsdam 4. Bundeswehr ADP – Support Center, Euskirchen
United Kingdom	1. Defence Science Technology Laboratory Portsdown West Facility, Fareham Hampshire
United States	1. Distributed Continuous Experiment Environment, USJFCOM/J9, 115 Lake View Parkway, Suffolk, VA 2. Joint Battle Center, 116 Lake View Parkway, Suffolk, VA 3. Defense Information Systems Agency AITS/JPO, Arlington, VA
NATO	1. Castlegate, Germany

There were over 400 participants in MNE 3, including 12 senior concept developers (SCDs). There were 118 actual players in the coalition task force (CTF) and 43 in the NRF.

E. SCENARIO SUMMARY

The scenario for this experiment was set in 2004 Afghanistan utilizing real-world data and scripted vignettes reflecting possible future developments within the area. In the scenario,

an insurgency under the leadership of a known dissident and warlord was having some measure of success. Due to the rapidly deteriorating security situation, additional assistance was requested from the United Nations (UN). NATO responded to the UN Security Council call and authorized out of area operations for the NRF. Furthermore, on 2 February 2004, a "coalition of the willing" stood up a CTF based around the U.S. Central Command (USCENTCOM) standing joint force headquarters (SJFHQ) construct to deal with the problem in Afghanistan. Six nations (Australia, Canada, France, Germany, the United Kingdom, and the United States of America) started EBP using a coalition ONA.

F. EXPERIMENT DESIGN AND CONDUCT

As several nations had already developed their own variations of an EBP concept prior to MNE 3, it was necessary to write a new version of the EBP concept specifically for MNE 3. This version was based on features from the national EBP concepts and provided a common baseline for MNE 3.

To examine the viability of and the procedures required for implementing EBP, certain overarching and supporting concepts were required to accurately depict the planning environment. These included: Operational Net Assessment (ONA), Collaborative Information Environment (CIE), Coalition Interagency Coordination Group (CIACG), Coalition Intelligence, Surveillance and Reconnaissance (CISR), Multinational Information Sharing (MNIS), Logistics, Coalition Based Health Services Support (CBHSS), Information Operations (IO), and Knowledge Management (KM).

The United States chose to implement a Coalition Task Force Headquarters (CTFHQ) based on the SJFHQ organizational construct. The experiment was designed so that NATO and Allied Command Transformation (ACT) would examine and implement the EBP process in parallel with the CTFHQ.

For MNE 3 a CIE was developed. The CIE enabled collaboration at will between selected groups of individuals or organizations. The CIE is defined as the aggregation of infrastructure (hardware, software, and communications links), capabilities (synchronous and asynchronous), people, procedures, and information for the common purpose of creating and sharing data, information, and knowledge necessary to plan, execute, and assess coalition/NRF operations.

Elements of the CIE deployed for MNE 3 included:

- A secure, reliable network built on the CFBL network using virtual private network (VPN) technology
- InfoWorkSpace (IWS) collaborative tool
- Voice Over IP (VOIP) telephony
- Web portal
- Situation Awareness provided through the WEBCOP
- ONA Database

The MNE 3 EBP processes and the use of the CIE were introduced to participating nations through on-site training in the partner nations, collaborative training, and workshops prior

to experiment execution. To facilitate experiment execution, a week of training (Week 0) was followed by two weeks of live play. A single scenario and vignette was used to stimulate the CTFHQ and NATO Experimental Deployable Joint Task Force Headquarters (XDJTFHQ) EBP process. Both the NRF XDJTFHQ and the CTFHQ worked through the EBP process simultaneously (See Figure 2). The scenario required that the NRF deploy to Afghanistan on 18 February 2004 for a minimum of 30 days to seize an airhead, and to protect a weapons and ammunition depot. The scenario CTF effects tasking order (ETO) to support this operation was expected to be issued no later than 19 February 2004.

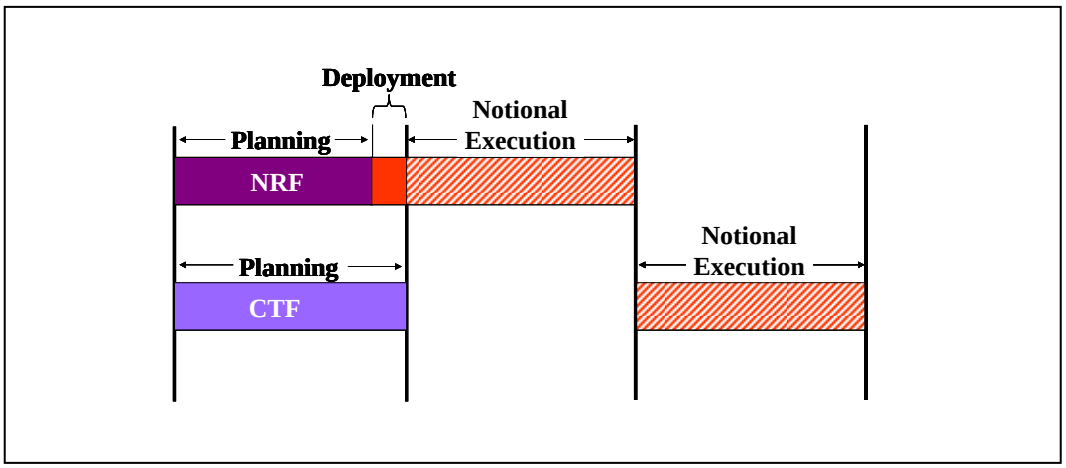

Figure 2: MNE 3 Construct

SECTION 2: DATA COLLECTION AND ASSESSMENT METHODOLOGY

The assessment team was organized to support the analysis functions of the experiment, which included: assessment planning, data collection, data analyses, and results reporting. All partner-nation analysts were integrated into the USJFCOM analysis team to contribute to the assessment process, from planning to reporting. Assessment focused on two primary areas:

- A qualitative comparison of the conceptual and applied models of the EBP and supporting processes, organizations, and technologies, and
- Non-intrusive observations and participant perceptions and insights on specific aspects of the EBP and supporting processes, organizations, and technologies.

Conceptual models representing the functional and temporal aspects of EBP and supporting processes, organizations, and technologies were developed using the G2 and C3TRACE process model tools. These models captured internal and external tasks, processes, organization, and communications played during the experiment. The models were developed during the experiment validation Rock Drill and the experiment. Figure 3 depicts the components of the conceptual models.

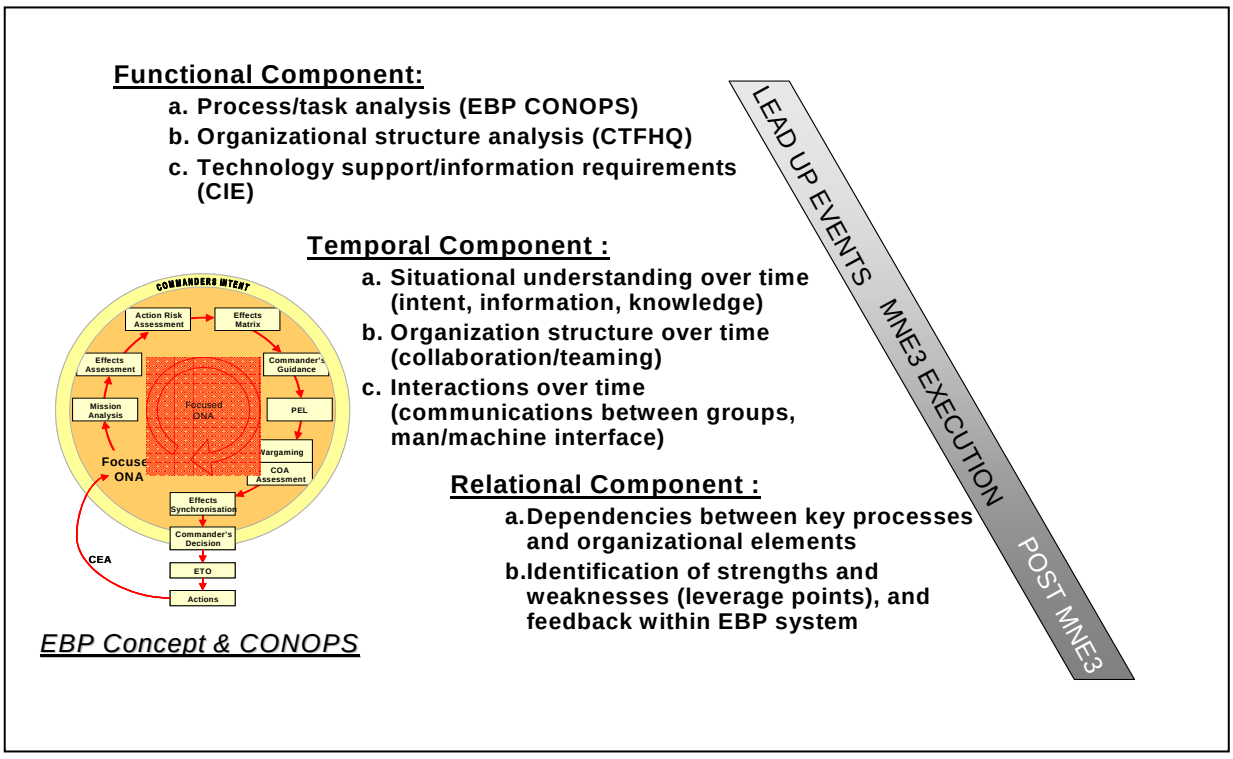

Figure 3: Conceptual Model Components

The output of these models can then be compared to the physical model of the processes, organizations, and technologies employed by the CTFHQ as well as the XDJTFHQ during experiment execution to build a relational understanding of key processes and organizational elements. These measurements and observations are then used to update conceptual models so as to document the developed EBP process for subsequent experimentation.

The experiment generated qualitative and quantitative data needed to gain insight into the EBP process and supporting processes, organizations, and technologies. Qualitative data include subjective evaluation of events by participants and observers through the use of surveys, SCD insights and observations, participant seminars, daily end-of-the-day reviews ("hotwashes") and end-of-week after action reviews (AARs). Quantitative data sets are objective measurements of events from nonjudgmental observers or instrumentation such as command, control, communications, computers, and intelligence (C4I) system usage. This data is critical to finding inefficiencies in process, organization, and technology. Qualitative data were analyzed for trends and commonalities and for differences in rating metrics. Quantitative data were also analyzed for time-and-event-frequencies associated with the EBP process, as well as task, communications, and workload analyses.

Objective 1 Methodology. The analytical design to support the process objective was divided into effectiveness and performance of the EBP process. The effectiveness critical operational issue (COI) was analyzed through synthesis of survey responses and participant insights. The result of the effectiveness COI provides a high-level assessment of the EBP process and indicators of areas for further development. The aim of the analysis under the performance COI was to identify specific issues that impacted execution of the process. The performance COI was analyzed through synthesis of survey responses, participant insights, numerical C4I data, and direct observations.

Objective 2 Methodology. Qualitative and quantitative data were used to assess the CTFHQ and XDJTFHQ organizational structures, as well as the human behaviors and competencies required to conduct EBP. The ultimate aim was to identify critical organizational constructs and to understand organizational relationships since these are vital for effective C2 of joint, allied, or coalition task forces.

Objective 3 Methodology. Qualitative and quantitative data were used to assess MNE 3 implemented technologies, and to identify functionality requirements for EBP. The aim was to identify technology requirements to support coalition and NRF EBP.

Furthermore, an experiment analysis workshop was convened to enable all analysts to contribute their inputs to the final report. Partners discussed their insights into the objectives and concepts for which they had lead analysis responsibility, as well as proposed experiment findings.

SECTION 3: MAIN EXPERIMENT FINDINGS

A. OBJECTIVE 1 DISCUSSION

Develop and Assess Processes to Support Coalition and NRF EBP.[2, 3]

Proposition 1: The application of EBP will improve an operational commander's ability to:

- Broaden the range of effects considered
- Broaden the range of actions considered
- Respond in an agile fashion to changing conditions
- Coordinate actions with multinational military and nonmilitary participants
- Enable exploitation of military and nonmilitary knowledge, and
- Create a comprehensive ETO.

EBP depends on a complex array of processes. These processes involve the integration of many concepts into one coordinated endeavor. If these concepts are employed to their full extent, and each contributes necessary information to EBP, the CTF and NRF will be successful in performing EBP. Successful EBP performance is defined by the ability to meet the six requirements identified in proposition 1.

The MNE 3 EBP concept describes a 13-step process that begins with the identification, in the Commander's Initial Guidance, of key effects to be considered, develops a detailed assessment of the numerous effects and actions that can be taken against nodes needed to achieve these key effects, and examines the resources available to be used to accomplish these actions. It then develops a single COA, where considered military and possibly nonmilitary actions are then synchronized. The result of this is a single plan reflected in the ETO. The steps are essentially sequential but some parts of the process may be conducted in parallel, and the complete process would require several iterations to refine the overall plan for EBO.

1. Objective 1 Overall Assessment Results

The EBP concept shows promise, but there was consensus among the MNE 3 participants, observers, and analysis team members that the MNE 3 concept needs further refinement. The MNE 3 EBP concept is not sufficiently mature to be considered for operational planning at this juncture. However, there are fundamental parts of the concept that show great promise for the future. The focus on effects throughout the planning process was beneficial, and enabled the CTF and NRF to consider a broad range of actions across all instruments of coalition power (diplomatic, information, military, economic (DIME)), attempting to employ nonmilitary options when possible.

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[2] During the planning for and execution of the experiment a multinational EBP and supporting processes and organizations were developed and refined.

[3] Assess is defined as evaluating the importance, significance, value, or merit of the processes, organizations, and technologies examined in the experiment.

A proactive CIACG brought invaluable civilian perspective to the CTF staff. Their participation is needed to focus civil-military planning efforts. The multinational interagency process at higher levels and appropriate communications paths with the CIACG must be defined for the concept to realize its full potential. The CIACG detailed role, organization, and staffing need further definition as well.

Some gaps in the process conducted in MNE 3 were identified prior to the experiment. For example, it was known that there was no capability during MNE 3 to conduct detailed assessment of the COA by wargaming and analysis (one of the EBP tasks). As the experiment progressed, it was acknowledged by both participants and observers in the CTF and XDJTFHQ that the EBP concept underpinning MNE 3 was inadequately described, not logically constructed, omitted detailed instructions, and used confusing terms and definitions. Additionally, the experiment lacked sophisticated tools to support the decision-making processes. The experiment highlighted deficiencies in the key process steps, discrepancies in the description of the related concepts, and technical challenges relating to the provision of information to the headquarters planning staffs. In addition, EBP is not a complete stand-alone planning system and requires integration with other components and concepts. Integration is required, by way of example, with intelligence, logistics, and deployment planning. To move forward the architecture of the overall process must be more clearly articulated.

2. COI 1.1 – Does the MNE 3 implementation of EBP facilitate the operational level of command's ability to address their objectives?

a) *COI 1.1 Assessment Results*

The MNE 3 EBP process did not demonstrate an ability to facilitate planning for CTF and NRF objectives. However, it is not clear whether the difficulties experienced during MNE 3 are attributable to process shortcomings or other factors impinging on the experiment and its execution.

The findings of MNE 3 indicate that the EBP process does have merit. EBP forced military planners to think in terms of effects, leading planners to consider not only military actions to achieve commander objectives, but also diplomatic, information, and economic actions. In addition, the EBP collaborative process allowed planners to interact from distributed sites to pool their ideas into a collective thought process.

The EBP process employed in MNE 3 does require some improvements to be made. The process implemented in MNE 3 tended to be overly mechanical. It focused planners on following process steps instead of keeping sight of "big-picture" campaign objectives. EBP lacked detailed procedures for how to perform the process, and it omitted the roles of other planning elements, like components, logistics, and CISR. The MNE 3 EBP process was not flexible enough to allow planners to easily adapt their plan to changing conditions and provide alternative COAs when desired end-states were not being achieved. MNE 3 did not develop an operational framework at the start of the process as a basis for COA

development later in the process. Some aspects of the early steps in the EBP process were insufficiently developed and this adversely impacted upon the conduct of the subsequent steps in the EBP process. These factors cut across individual process steps and contributed to planners' inability to produce an ETO in MNE 3.

b) *COI 1.1 Findings*

(1) Finding 1 → The EBP concept has the potential to make the CTF and NRF more effective instruments of power. However, the EBP concept developed for MNE 3 is not operationally mature and requires further refinement.

It is not possible to determine whether the difficulties experienced during MNE 3 are attributable to process shortcomings or the way the experiment was executed. A number of confounding variables (process, organization, technologies, and experience) make it extremely difficult to identify specific causal factors. CTF and NRF players tended to agree that the process can be cumbersome at times and needs to be driven from the command group. More thorough and structured experimentation is needed to discriminate between process and experiment shortcomings.

(2) Finding 2 → Players stated that the best features of the EBP process were:

(a) It forced military planners to think in terms of effects, which expanded alternative ways to achieve objectives beyond military actions, and
(b) Collaboration brought out the best ideas from a collective thought process.

CTF and NRF players indicated the most valuable aspect of the EBP process was its ability to stimulate a new way of thinking that focuses on effects. EBP also forced military planners to think in nonmilitary terms and consider nonmilitary options such as diplomatic, information, and economic actions in their COA development. Additionally, the collaborative and sharing aspects of the process were its strengths, bringing out the best thoughts and ideas from a diverse group involved in the planning.

(3) Finding 3 → The CTF and NRF considered a broad range of actions across all instruments of coalition power (DIME) during the planning process, attempting to employ nonmilitary options when possible.

The CTF considered a broad range of actions. The nonmilitary actions tended to be diplomatic and economic, using military only as a final or minor part of the actions required to achieve an effect. The military actions chosen were driven by the initial stages of the deployment which would likely be military centric. The NRF also considered nonmilitary actions but the majority of actions NRF selected fell into the information or military categories. This was driven by the type of mission the NRF was planning, and by the time constraints of their deployment.

(4) Finding 4 → Players stated the most difficult parts of the MNE 3 EBP process were:

(a) The complexity of the process inhibiting thought and analysis
(b) Understanding the process
(c) Confusing terminology, and
(d) Lack of an integrated tool suite

The most difficult parts of the EBP process for most players centered on the complexity of the process, having undue rigidity, and being convoluted by too many individual steps. This led players to lose focus on the big picture. Adhering to the process began to take precedence over analysis and thought. Confusing terminology was a major complaint and needs to be addressed, especially in a distributed collaborative environment where English may not be the participants' first language. For example, there were too many terms, and terms overlapped to express the same ideas, e.g., effects, effect-node (E-N) pairs, targets, target audiences. The tools employed for MNE 3 were difficult to use, were of limited utility, and did not directly support assigned tasks. A deficiency in tool functionality forced staff planners to undertake extensive data management manipulations and provided little contribution to commander decision support. The presentation quality of the output of the tools needs to be improved, and further development is required to better meet the requirements of the commander to visualize the overall plan as it is being developed. Finally, the CTF and NRF concurred that the COA and wargaming step was the most difficult.

(5) Finding 5 → The EBP process should develop an operational framework within which to appreciate and synchronize the detailed effect-node-action-resource (ENAR) linkages generated during the EBP process.

The process steps defined in the EBP CONOPS risked producing "tunnel vision." The EBP process did not develop an adequate operational framework at the start of the process as a basis for the subsequent development of the COA. Without an overall idea of the campaign and a logical flow of required actions, the CTF and NRF participants found it difficult to develop and synchronize the COA from the hundreds of ENAR sequences they had developed. The lack of overall perspective was attributable to the procedural, mechanistic manner in which the ENAR sequences were generated and not placed into an overall design.

(6) Finding 6 → The EBP process must be flexible and should:

(a) Allow planners to easily adapt their plan to changing conditions
(b) Provide readily available alternatives (COAs) when desired end-states are not being achieved, and
(c) Work for short-time-scale crisis action planning situations.

CTF players did not attempt to modify the plan as there was only sufficient time to construct an initial plan. Players stated they were unable to determine if they could modify a plan to flex with changing conditions because the process was too new and confusing.

NRF players stated the process did not have contingency feedback or revision loops and was too detailed to facilitate rapid change.

Participants disagreed as to whether the EBP process should provide alternative COAs. A premise of the EBP concept is that alternate COAs are unnecessary since a single plan has contingent ENARs that provide commanders quick access to other COAs. NRF and CTF players asserted the way the process was employed in MNE 3 only permitted the development of one COA with no alternatives.

CTF and NRF players indicated the MNE 3 EBP process was too lengthy to work in short time frames. The required analysis of information available at each stage was too time consuming, tedious, and inefficient during crisis planning.

(7) Finding 7 → The TTP and CONOPS need to contain sufficient detail to explain exactly how to complete a step.

While the CONOPS and TTP contained specific tasks to be completed and by whom, there was insufficient detail on how to complete tasks. As a result of the inadequacies of the CONOPS, TTP, and training, an inordinate amount of time was expended as players came up with procedures for completing assigned tasks.

(8) Finding 8 → The EBP process should represent a complete operational planning process and provide for the integration of supporting processes and procedures.

The EBP process as implemented in the MNE 3 CONOPS did not ensure adequate consideration of supporting planning factors. Examples included: intelligence, rules of engagement, psychological operations, information operations, logistics, medical, force activation, deployment, and C2.

3. COI 1.2 – What are the critical human and mechanistic processes, dependencies, and information flows in EBP?

a) *COI 1.2 Assessment Results*

The CTF applied EBP process deviated from the conceptual process early in the experiment, while NATO more closely followed the conceptual process. During Week 1, participants developed an applied, as opposed to a conceptual, understanding of the process. However, as time pressures built to produce the outputs needed to continue the experiment battle rhythm, the completeness of the tasks and the quality of the output degraded. In particular, the flow of effects among military strategic objectives, commander's initial guidance, mission analysis, and effects assessment adversely impacted the conduct of the remaining process steps. The lack of integration of the EBP tools and concepts with the ONA database contributed to challenges the staff faced in working through the applied process. The cumulative effect of these early challenges resulted in the COA development, wargaming, and synchronization steps not being completed and as a consequence the ETO was never produced.

b) *COI 1.2 Findings*

(1) Finding 1 → Greater process efficiencies could be achieved if appropriate process steps were performed simultaneously.

In general, the EBP process steps were performed sequentially because of the linear dependencies between process step outputs and products and inputs to the next step, and the requirement to utilize the same personnel in all the steps. The exception to this was that some steps were performed simultaneously (effects assessment, actions assessment, and COA wargaming and synchronization) when incremental outputs were produced, as opposed to a single final product being generated to feed a dependent step. For example, the effects assessment step produced incremental updates to E-N links, which stimulated the simultaneous performance of the actions assessment step.

(2) Finding 2 → The EBP process, organization, and technology need to be flexible enough for planners to revisit steps when they find product deficiencies in subsequent steps.

This will require a degree of sophistication and maturity in the headquarters not observed in MNE 3 because of experimental constraints. The relative inexperience of players with the EBP process meant that the process steps and information flows were linearly coupled. Thus difficulty in performing any single step, combined with the inability to revisit that step, significantly degraded the entire EBP process and resulting products.

The cumulative impact of inexperience, time constraints, and the inability of participants to complete all the required tasks in a step to the necessary level of detail resulted in poor quality outputs that did not support subsequent steps. This rendered the final two EBP process steps, synchronization and the ETO, unusable.

(3) Finding 3 → Commander's guidance must drive the focused ONA during planning and operations to maintain logical consistency between commander's guidance and staff planning.

In the current construct the content of the ONA determines the shape and style of operational planning. In MNE 3 the commander's initial guidance was not explicit in detailing the effects for the staff to develop during mission analysis. Staff mission analysis was not based on a detailed analysis of the ONA. Processes need to be developed to focus the ONA database during the commander's initial guidance and during the planning process.

(4) Finding 4 → Mission analysis is the foundation for the rest of the process and must be complete and contain a well analyzed initial set of effects that reflect commander's guidance and operational framework.

Upon completion of mission analysis, participants stated that the mission statement provided was sufficient to begin effects assessment. However, later in the experiment participants realized that the mission analysis was rushed and not enough time was spent analyzing the initial set of effects outlined in the mission statement. This led to problems developing the priority effects list and during the COA and synchronization steps.

Participants also commented on the need for additional commander's guidance at the completion of mission analysis.

(5) Finding 5 → The same personnel should perform effects and actions assessment.

Player comments indicated that the EBP process could be improved by ensuring that the same individuals complete the effects and actions assessment steps, as outlined in the CONOPS and TTP. During the experiment these steps were conducted concurrently by two separate cells comprised of different personnel. This created a situation where the Actions Assessment Cell did not have sufficient knowledge of the context of the information associated with the E-N pairs. Passing E-N pairs from the Effects Assessment Cell to the Actions Assessment Cell without additional context and information, or the personnel who possess that information, runs the risk of the Actions Assessment Cell associating the wrong action-resource pairs.

(6) Finding 6 → COA development and wargaming need to be integrated throughout the entire EBP process and not executed as a separate step late in the process.

COA development should begin with the effects assessment step and continue throughout the process. This was identified as an issue prior to experiment execution, but was unable to be addressed in time to affect experiment play. Wargaming is inherent in the entire effects generation process, where consideration of second and third order effects plays an important role. It should not be viewed as a separate step but included throughout the process.

(7) Finding 7 → The synchronization step should be started earlier in the process.

Players commented that the synchronization step needs to be started earlier in the EBP process so that problems can be identified and solved early on. It should be an iterative process that is done in concert with COA development and not identified as a specific step.

(8) Finding 8 → Measures of effectiveness (MOEs) for effects should be considered early in the process.

The EBP process deferred consideration of manifestation characteristics for each effect, and a methodology to observe those characteristics until the wargaming and COA assessment step. Participants stated that MOEs should be addressed much earlier in EBP, either in the mission analysis or effects assessment steps. Early consideration of MOEs will facilitate effects assessment and improve the integration of CISR with core operational planning. Early identification of MOEs enables their decomposition into observable components, tasking traditional and non-traditional assets to collect on those observables, prioritizing collection efforts within resource constraints, and identifying potential resource enhancements.

4. COI 1.3 – How well do the current logistic planning processes support the construction of a coalition force deployment plan within the EBP process?

a) *COI 1.3 Assessment Results*

The main task of the logistics planning staff was to develop a deployment and a sustainment plan. However, in MNE 3, EBP did not address the level of detail needed for logistics planning. Therefore, these details were determined outside of the process steps and were not timely enough for the planning effort. The result was that deployment and sustainment planning and all associated coordination were among the very last actions taken. It is possible that if the Plans Team had sufficient time and experience with the EBP process to fully develop the effects, nodes, and actions, that the decisions and information needed for logistics planning, such as force composition details and required order of arrival, could have been addressed as part of the EBP process.

b) *COI 1.3 Findings*

(1) Finding 1 → There is a need to create a coalition logistics structure and plan as a coalition, not as group of individual nations.

There is a need to rethink how to create a true coalition logistics structure and logistics database with inputs from all nations. The coalition logistics support structure should take advantage of the capabilities of each nation and draw on the expertise of nations having extensive knowledge of specific areas of responsibility. The database must be more than from just the lead nation. It must contain logistics planning factors from each of the coalition partners, so that coalition logistics planners know how their plans will affect individual nations.

(2) Finding 2 → The CTF commander should have some directive authority for coalition logistics.

Experiment participants and SCDs stated that a CTF commander must have the authority to direct common user support functions for all nations. Common functions include air and sea port operation, in-theater air, land, and water movements and movement control, medical services, contracting, host nation support, food, water, fuel, common munitions, construction material, hired labor, and other common functions. If multinational logistics burden sharing occurs, then possibly a coordination center, such as the NATO Multinational Joint Logistics Centre, could be agreed upon by the nations. Directive authority for logistics would have implications for the coalition nations and must be defined early.

(3) Finding 3 → Having the logistics staff embedded in the plans and operations groups enhanced EBP.

Participants strongly agreed that having the logistics staff embedded in the plans and operations groups enhanced EBP. Those who had previously worked in a collaborative environment with embedded logisticians were very strongly in favor. The situational awareness and situational understanding of planners, operators, and logisticians was enhanced

by having the logisticians embedded in the plans and operations groups. Additionally, the role of the logistician as advisor and conscience is much improved with collocation.

Deployment, employment, and sustainment are critical logistics and CTF functions. Senior members of the CTF staff said consideration should be given to making logistics a center and the fifth component of the headquarters. They also said that logisticians should continue to be integrated with plans and operations. Several coalition partners concurred with this approach.

5. COI 1.4 – Do MNIS disclosure and release procedures provide the information needed to support multinational EBP?

a) *COI 1.4 Assessment Results*

Examination of MNIS in MNE 3 was limited to technical solutions for disseminating information across security domains. The technologies functioned successfully.

b) *COI 1.4 Findings*

(1) Finding 1 → MNIS in MNE 3 successfully demonstrated technical innovations required to share U.S. information with coalition partners.

During MNE 3 a series of tests of technology developed to support MNIS was conducted. After using the existing foreign disclosure officer process to approve simulated, U.S.-only information for release to partner nations in the experiment, MNE 3 technology then shared the information with coalition partners through three transmitting methods: 1) interactive text chat, 2) E-mail, and 3) ONA database transfers.

Each method allowed U.S. participants to transmit information from a U.S.-only simulated SIPRNET network to the CFBL network where MNE 3 was conducted. Only specialized links connected the physically-separate networks to ensure security.

U.S. experiment analysts systematically verified information sharing methods by running multiple trials to scrutinize the technology used in MNE 3. Each method functioned as intended and was deemed successful.

6. COI 1.5 – What CISR process is required to support EBP?

a) *COI 1.5 Assessment Results*

The experiment was not designed to promote robust CISR play, and the late or inadequate development of products to steer intelligence planning hindered the CISR process. The CIACG will play a key role in smoothing operational level CISR coordination among multinational interagency elements, as well as in nongovernment organization (NGO) involvement in intelligence collection.

b) *COI 1.5 Findings*

(1) Finding 1 → CISR must be prepared to provide broader support to EBP than it provides to traditional planning.

Taking advantage of nonmilitary, multinational CISR capabilities in information requirements identification, collection tasking, raw data processing, and product dissemination requires CIACG involvement in the early stages of CISR planning. A role-playing SCD commented on the CIACG's role in increasing opportunities for CISR coordination at the operational level among multinational interagency intelligence elements. A related comment, from a senior mentor, concerned using nontraditional intelligence collection sources, including indigenous and NGO personnel for low-tech human intelligence operations. Again, extensive early coordination through CIACG elements would be required to determine the mechanics of including NGOs in the CISR planning process, while preserving their autonomy and neutrality.

7. COI 1.6 – To what extent was the CIACG able to coordinate and harmonize operational planning between the coalition military planners and the relevant civilian agencies or departments of their respective governments?

a) *COI 1.6 Assessment Results*

The CIACG provided timely and substantive civilian perspective to the military planning process, appropriate feedback to national interagency players in their respective capital or national site, and established an efficient collaboration forum among members of the group. The CIACG may help to synchronize diplomatic, information, and economic actions with military actions, an essential feature of military operations. The full development of such a capability requires additional coalition interagency coordination efforts at levels above the CTF and proper communications paths with the CIACG. By the end of the experiment there was a strong consensus among participants that the inclusion of civilian planners is essential to the EBP process. However, the CIACG is a developing entity needing further definition regarding its precise role, composition, relation with the CTF staff, and reach-back access to key national interagency correspondents. Coalition interagency processes at levels above the CTFHQ must also be considered in the further development of the CIACG concept to ensure its full coordination potential is realized. The activation of a CIACG function should take place as early as possible during the military coalition formation process to allow early civilian inputs to the ONA and EBP processes.

Emphasis should be placed on the need to develop an interagency political-military plan as a prerequisite for realistic EBO. Such a plan would require higher-level, multinational, civilian policy expertise. Because an international intervention consists of many coalitions—such as political, military, law enforcement, and relief—EBO concept development also must account for the interface with other government departments.

Since interagency involvement in the planning process precipitates additional issues, KM must be aggressive, particularly at the beginning of an operation, to expand the scope of

those efforts. As experimentation continues with interagency involvement, greater diversity of expertise in the design, conceptual aspects, and analysis of experimentation will be required.

b) *COI 1.6 Findings*

(1) Finding 1 → The CIACG brings a valuable civilian perspective to military planners, the CTF staff and the command group that is essential to an effective EBP process.

There was valuable civilian perspective brought to the CTF staff, including planners and the command group, by a proactive CIACG. Their participation is necessary to focus civil-military planning efforts. MNE 3 data shows the need for early CIACG set up and training during military coalition formation and ONA development. Additional interagency coordination is needed at levels above the CTF to allow the CIACG concept to be most effective at the operational level.

(2) Finding 2 → The CIACG role, organization, and interactions with the CTFHQ staff and external resources must be further defined.

The CIACG concept was new to most of the MNE 3 participating nations and a common understanding of its various aspects is still evolving. The responsibilities of a CIACG could vary in terms of strength of involvement in civil-military operational planning and coordination. Within the CTFHQ, CIACG and staff interactions need to be clarified. The CIACG and political-military planner respective roles and interaction should receive special attention. CIACG external linkages and higher level coalition interagency coordination requirements also need further definition.

The CIACG manning level and expertise must be consistent with multiple distributed activities within CTF staff and joint operations area characteristics. The CIACG unique information superiority and KM requirements, to include tools, will necessitate further attention as the concept matures.

(3) Finding 3 → The EBP process would highly benefit from an early set up of the CIACG.

The activation of a CIACG function should take place as early as possible during the military coalition formation process to allow early civilian inputs to the ONA and EBP processes. This would also facilitate team building between CIACG representatives, system-of-systems analysts (SoSAs) and planners, as well as securing proper reach-back capabilities for CIACG national representatives.

8. COI 1.7 – Did ONA support the EBP process?

a) *COI 1.7 Assessment Results*

The ONA is an initial enabler and starting point for EBP. The basic concept of an ONA, a single source of diverse factual and assessed information and specialist expertise, would be highly beneficial in support of the planning processes. Although the ONA databases were

not developed to a sufficient level to meet the needs of EBP in this experiment, the potential of the ONA concept was observed in MNE3. The logic of the ENAR linkages is simple and straightforward in concept and would benefit operational planning approaches.

Participation of planners in ONA development should occur as early as possible. The focused ONA is supposed to be the foundation of the EBP, but the product requirements need to be defined. During MNE 3, the Plans and Information Superiority Teams used immature experimental planning tools that were not sufficiently integrated, resulting in feedback to and updating of the ONA database being consistently one step behind the planning process.

b) *COI 1.7 Findings*

(1) Finding 1 → Planners from all nations must be involved in the development of the ONA.

National ONA databases were developed to different levels of detail and completeness. The initial set of effects contained in the focused ONA was primarily a U.S. effort. Most of the work performed to populate the database, including nodes, node-to-node linkages, and node-to-effect linkages was done by the U.S. and German SoSA teams with input from the U.S. Blue Cell planners. The other nations were afforded the opportunity to participate but declined the invitation. As a result, planners from the other countries were not familiar with the contents and had little understanding of the rationale behind the construction of linkages. The diversity of perspectives of all the nations is needed.

(2) Finding 2 → Contributions from subject matter experts such as CIACG and information operations need to be integrated in the ONA.

By integrating the experts early, a deeper and even more realistic SoSA is produced resulting in a better baseline ONA. It enhances the building process to create a wider range of options and higher quality of the ENAR and the corresponding linkages.

(3) Finding 3 → The requirements which distinguish a focused ONA from a baseline ONA must be defined.

Because there was no definition of a focused ONA, there was confusion among participants as to what a focused ONA should contain. The requirements for a focused ONA and its contents must be clearly defined.

(4) Finding 4 → The ONA requires a workable visualization and planning tool.

Information in the ONA database is extremely difficult to assimilate in its current form. Existing visualization tools do not present the information in a usable manner.

(5) Finding 5 → Merging of national ONAs requires common formats and established procedures to ensure interoperability.

Common database software and business rules developed and agreed upon by all coalition SoSA teams promoted the merger of the various national ONA databases. However, the

lack of a continuous collaborative environment prior to the start of the experiment prevented the necessary real time exchange needed to facilitate the identification of duplicate entries and refinement of the references attached to the nodes. The SoSA teams were forced to use manual searches and e-mail to eliminate duplicates and refine the database. Man-hours for merging proved considerable because the process was labor intensive (approximately 1000 man-hours).

9. COI 1.8 – Did KM support the EBP process?

a) *COI 1.8 Assessment Results*

The KM concept and CONOPS lacked clear definition of roles and responsibilities.

b) *COI 1.8 Findings*

(1) Finding 1 → The KM concept must be developed with roles and responsibilities clearly identified.

Planning for KM participation in MNE 3 did not begin until late in the experiment planning process. Prior to the experiment, the KM concept was in the process of being rewritten. As a result, the KM CONOPS lacked clear definition of roles and responsibilities. Therefore, participants indicated KM was not understood or properly integrated into the planning process.

10. COI 1.9 – Did IO support the EBP process?

a) *COI 1.9 Assessment Results*

Participants observed that IO has significant potential to contribute to the EBP process. The lack of a commonly agreed concept, the late integration in MNE 3 preparation, and the lack of a common understanding reduced the effectiveness of the IO participation in MNE 3.

b) *COI 1.9 Findings*

(1) Finding 1 → IO needs to be an integral part of the EBP and ONA process.

Participant comments revealed the necessity of implementing IO capabilities in ONA development and the planning process. This will create a wider range of actions and corresponding resources available to the commander. The IO specialists need to be integrated into the planning process.

11. COI 1.10 – Does the CBHSS process support EBP?

a) *COI 1.10 Assessment Results*

Medical subject matter experts assisted in the continued refinement of the ONA database. Additionally, they supported planner's efforts by identifying humanitarian related effects,

E-N linkages, actions, and resources. However, there was a lack of planner understanding of what CBHSS brought to the process and how CBHSS would be employed in EBP. The Plans Team focused on internal process issues and medical issues were only addressed when information was pushed into the planning process.

b) *COI 1.10 Findings*

(1) Finding 1 → Medical participation in MNE 3 supports the decision to include a medical planner on the CTF staff.

The medical expertise provided during the experiment complemented the EBP process. Medical planners assisted in identifying effects consistent with the commander's guidance and were instrumental in the selection of valid actions for humanitarian effects the coalition wished to produce. In addition, they provided rationale, from a medical perspective, for developing E-N linkages and identifying second and third order effects.

(2) Finding 2 → The EBP process CONOPS and TTP need to reflect Medical input.

The CONOPS and TTP did not reflect what inputs CBHSS would be asked to provide. The level of medical participation in the EBP process needs to be clearly defined and articulated.

(3) Finding 3 → Medical planners should be involved early on in the process to facilitate a more detailed ONA from a medical perspective.

Medical planners provided valuable contributions to the development of the baseline and subsequent focused ONA through close interaction with U.S. SoSA analysts. They were able to refine and augment SoSA analysis of critical nodes and provided updates to the actions and resource lists contained in the ONA.

B. OBJECTIVE 2 DISCUSSION

Develop and Assess Organizations to Support Coalition and NRF EBP.

Proposition 2: The EBP organizational design will:

- Enable the flow of information
- Facilitate the generation of knowledge
- Enhance planning
- Improve decision making and
- Produce an effective ETO.

The CTFHQ and XDJTFHQ organizational structures identified for MNE 3 were based upon the design of cross-functional teams connected in a habitual way to distributed experts including nonmilitary government and civilian agencies and coalition partners. The staff was organized to enable the effective flow and integration of information. It was expected that the elimination of functional "stovepipes" would reduce coordination time and allow synergistic planning and execution. The fluid movement of information between people via machine interfaces was both a challenge and an opportunity for commanders. It was

proposed that if managed properly, this organizational structure would produce better decisions faster and ultimately, the output of the EBP process, the ETO, would produce the desired effects when executed.

1. Objective 2 Overall Assessment Results

The experiment applied two variants of the SJFHQ construct: distributed CTFHQ and collocated XDJTFHQ. There was an initial period of work-up and some team-building within the staff. Preliminary analysis of results indicates the cross-functional staff structure was effective. However, the boards, centers, and cells generally functioned poorly, and were mainly used to communicate results achieved at each stage in the process, rather than for collaborative decision-making.

The inexperience of players with the boards, centers, and cells construct and how they were to employ it during MNE 3 led players to abandon the construct and revert to more familiar operating structures. Additional training for and rehearsal with the board, center, and cell construct is necessary in future experiments. Staff organization details need to be more closely aligned with EBP process requirements.

2. COI 2.1 – What organizational structure is required for EBP?

a) COI 2.1 Assessment Results

Participants indicated that the organization of the boards, centers, and cells was too complicated which caused them to streamline the organization. The functions defined in the TTP for the cells (Effects Assessment Cell, Actions Assessment Cell, COA Assessment Cell, and Synchronization Cell) did not map directly to the tasks identified in EBP CONOPS for the steps of the EBP process. Participants perceived there were an excessive number of boards, centers, and cells, and some players were allocated to more than one, leading to schedule conflicts. Protocols for meeting face-to-face have matured, yet protocols for facilitating meetings in a distributed environment need to be developed and refined. In particular mailing lists need to be provided, and meeting schedules and locations need to be distributed to members in an electronic form. There also needs to be a way of getting to know members of your groups without meeting face-to-face. Improvements in KM are also required. The board, center, and cell construct within a multinational arena must evolve with the EBP process and battle rhythm.

b) COI 2.1 Findings

(1) Finding 1 → The EBP process should drive staff organization requirements.

Preliminary analysis of results indicates the cross-functional staff structure was effective. However, participants agree an enhanced understanding of the integration, tasks, linkages, and relationships among the individual EBP process steps are needed to properly structure the details of the staff organization.

(2) Finding 2 → The boards, centers, and cells structure must be streamlined.

Partners from all nations indicated that the organization of the boards, centers, and cells was too complicated. During the course of the experiment the organization evolved into a structure that performed four major functions: decision-making, planning, advisory, and coordination.

The XDJTFHQ developed similar functions except the implementation was simplified by not using the Effects Assessment Cell, Actions Assessment Cell, COA Cell, and Synchronization Cell but instead used three plans related working groups reporting directly to the Coalition Planning Cell.

(3) Finding 3 → There is a requirement for structured business rules for coordination to ensure player understanding of the process and to establish information exchange requirements between working groups.

Processes were not defined to the granularity needed to develop adequate business rules. The lack of business rules led to procedural problems during the experiment, requiring the command group to reevaluate its plan of action. Players commented that there were no coherent business rules for coordination of various working groups, boards, centers, and cells. Rules for coordination of activities, in their most basic form, were lacking.

(4) Finding 4 → Coordination overhead must be reduced to increase headquarters efficiency.

An immature, multinational, distributed, cross-functional headquarters using a new set of tools has significant coordination overhead. The formation of planning working groups took significant coordination and detracted from the time available to perform planning tasks. Simultaneous activity across boards, centers, cells, and working groups during the experiment required extremely high levels of coordination.

Lack of familiarity with the process, tools, and organization exacerbated the time required for coordination. As a result, time pressures increased and participants became focused on producing the planning products in a timely manner rather than the quality of the products and resulting campaign plan.

The coordination overhead may decrease as the staff process matures but increase as the headquarters' focus moves from planning to operations. This is largely due to the need to continually revisit steps as the operation unfolds. Where possible the coordination overhead should be automated through business rules and process support tools.

(5) Finding 5 → Subject matter experts need to be integrated into the organization in a way that supports parallel planning.

When parallel planning tasks were executed, the available subject matter expertise (medical, logistics, CIACG, information superiority, KM, SoSA) was diluted, which reduced the overall effectiveness of the organization. Planners need to be provided with the means to leverage required expertise when subject matter experts are not directly part of a particular collaborative task.

3. COI 2.2 – What behaviors and competencies are required for EBP?

a) COI 2.2 Assessment Results

The experiment demonstrated that commanders must consider the difficulties of organizing and building team cohesion in a virtual CIE. Traditional leadership principles will continue to have relevance in the future CIE. However, there are issues that will influence how effective leadership is exercised and how teams develop in a virtual CIE.

The skills required to work in a CIE need to be clearly identified and the staff needs to receive appropriate levels and types of training to contribute effectively in a CIE.

b) COI 2.2 Findings

(1) Finding 1 → Leadership in a coalition CIE requires different skills than those required in today's C2 environment (information age vice industrial age).

Leadership skills have been well established. However, working in a CIE requires the development of new skills in relation to working in a distributed environment where informal and face-to-face contact may be absent. Areas identified during MNE 3 as being relevant to working in a CIE include:

- Coping with cultural and doctrinal differences
- Establishing trust and confidence
- Building habitual relationships
- Exploiting speed of developing knowledge and decision-making
- Ensuring comprehensive and timely information sharing
- Mastering information overload
- Partnering with civilian and other authorities
- Crafting and communicating commander's intent.

C. OBJECTIVE 3 DISCUSSION

Identify technology requirements to support coalition and NRF EBP.

Proposition 3: Technology will augment the human ability to conduct EBP through a suite of tools**.**

Technologies support the human ability to communicate and collect, process, and display information from diverse sources to conduct EBP in a CTFHQ and XDJTFHQ. Unless these technologies are easy to learn and use, are flexible, adaptable, and have utility, they will hinder the planning process which may lead to the rejection of the tools and the process they are designed to support.

1. Objective 3 Overall Assessment Results

Overall, the high-level functional requirements that were identified from the data analysis can be divided into two overarching requirements: a communication functional requirement and an EBP support functional requirement.

Text and audio chat as well as a shared view of the battlespace are required across all process steps and at all levels in the organizational structure. This will enable players to communicate and pass information while operating in a distributed environment. If real operations call for distributed planning, then a tool or a suite of tools will be required for communication and information sharing.

A tool or a suite of tools is required that guides players task by task through the entire EBP process. The EBP tool suite went part way in achieving this support, and the Office 2000 tool suite was used to fill in the gaps. The EBP tool was developed at the last minute. No time was available for a human factors test and evaluation of the tool. The same was true for the synchronization tool, which had no capability of guiding a player through this process step and had no ability to automatically link to other EBP tools. These are clearly deficiencies, but they can be rectified in future versions by conducting a systems design approach for process, organization, and technology development. Most players indicated that the portal tools were adequate, but the portal interface design needs refinement.

In summary, a systems-design approach would predict the technology requirements for EBP within the proper context. A human factors method would ensure tools reflect the EBP process and organization, and therefore better guide headquarters staff in achieving commander's intent and production of an appropriate ETO.

2. COI 3.1 – What functional requirements are necessary to conduct EBP within a coalition and NRF environment?

a) COI 3.1 Assessment Results

The intuitive IWS collaborative tool facilitated rapid initial learning for new personnel, contributing directly to the implementation of collaborative groups. The collaborative tool must facilitate situational awareness of groups, indicating their progress as well as their location. The ONA database and an EBP process tool need to be linked and interoperable; unnecessary duplication during the experiment created inefficiency and invited errors. In addition, there is a need for a planning tool that has a seamless application throughout the whole planning process.

Ultimately, collaborative tools were generally well received and added value to the experiment. The high degree of connectivity allowed dispersed teams to share information rapidly and to work simultaneously in different time zones. Despite some difficulties, these tools supported great levels of collaborative planning and could be used to include NGOs and other government departments in coalition military planning.

The effects analysis tools were less well received, needing further development for more effective support of operations planners who make decisions about ENARs. These tools must produce graphical representations of the ONA and EBP that can be used to convey the commander's intent to all echelons.

b) COI 3.1 Findings

(1) Finding 1 → EBP calls for an integrated suite of tools to support distributed collaborative planning as well as tools specifically designed to support the EBP process.

During the experiment, the need for an integrated suite of tools, from process start to finish, was identified. These tools provide both communications and process support functions. This tool suite must be interoperable with the ONA database, automated, user friendly, and produce products that are presentable to the commander. To move forward, the overall technical architecture must be clearly articulated as part of a systems design approach for process, organization, and technology development.

(2) Finding 2 → EBP relies on technology to provide an ability to consider, manage, and analyze large amounts of information.

This was only partially achieved during MNE3:

- CFBL VPN to support the MNE 3 activity was a success. There was one small network outage of approximately 2 hours when communications problems disrupted the network.
- The tools were a problem particularly at the beginning of the experiment. Licensing issues, the need for a reboot of the IWS server, and other technical issues detracted from the initial training periods.
- The modeling and simulation capability was successful in supporting and providing the common operational picture.

Nevertheless, the technology which supported the experiment was a significant improvement from that provided during previous multinational experiments.

SECTION 4: CONCLUSION

Much has been learned from this experiment that will need to be taken forward into future experiments.

a. The EBP concept shows promise but needs further refinement. The focus on effects throughout the planning process was beneficial, and enabled the CTF and NRF to consider a broad range of actions across all instruments of coalition power (DIME), attempting to employ nonmilitary options when possible.
b. The CIACG brings a valuable civilian perspective to military planners, the CTF staff, and command group that is essential to an effective EBP process.
c. The staff organization should be driven by EBP process requirements.
d. Distributed collaborative planning calls for an integrated suite of tools for communication and EBP support requirements.

Multinational experimentation continues to be a critical element of USJFCOM's joint concept development and experimentation program. The body of data collected during the multinational experimentation series, as well as insights from an even larger body of USJFCOM and multinational experiments, will guide MNE 4. Each event in the chain brings us closer to fielding the SJFHQ, to delivering innovation to the warfighter, and to recommending actions to senior leaders based on experimental findings.

Ultimately, the multinational experimentation program will result in better coalition warfare when the United States and its partners around the world apply their military forces. Dissimilar capabilities and perspectives must not hinder the ability to work together in combined military operations to address complex international issues. By working together in a dedicated multinational experimentation program, the United States and its allies ensure that they experiment as they fight.

APPENDIX A - ACRONYMS AND ABBREVIATIONS

AAC – Actions Assessment Cell
AAR – After Action Review
ACT – Allied Command Transformation
ARL – Army Research Laboratory
C2 – Command and Control
C4I – Command, Control, Communications, Computers, and Intelligence
CBHSS – Coalition Based Health Services Support
CDE – Concept Development and Experimentation (NATO ACT)
CFEC – Canadian Forces Experimentation Centre
CIACG – Coalition Interagency Coordination Group
CIADOS – Centre Interarmées d'Administration de l'Interopérabilité Opérationnelle des Systèmes d'information et de communication
CIE – Collaborative Information Environment
CISR – Coalition Intelligence, Surveillance, and Reconnaissance
COA – Course of Action
COI – Critical Operational Issue
CONOPS – Concept of Operations
CTF – Coalition Task Force
CTFHQ – CTF Headquarters
DCEE – Distributed Continuous Experimentation Environment
DIME – Diplomatic, Information, Military, Economic
EBO – Effects-Based Operations
EBP – Effects-Based Planning
EMA/EMP – Etat-major des armées, division emploi
E-N – Effect-Node
ENAR – Effects, Nodes, Actions, Resources
ETO – Effects Tasking Order
FR – France
GE – Germany
IO – Information Operations
IWS – InfoWorkSpace
J9 – Joint Experimentation
JBC – Joint Battle Center
JTF – Joint Task Force
KM – Knowledge Management
LOE – Limited Objective Experiment
MN – Multinational
MNE – Multinational Experiment
MN ONA – Multinational Operational Net Assessment
MNIS – Multinational Information Sharing
MOE – Measure of Effectiveness
NATO – North Atlantic Treaty Organization
NGO – nongovernment organization

NRF – NATO Response Force
ONA – Operational Net Assessment
SCD – Senior Concept Developer
SJFHQ – Standing Joint Force Headquarters
SoSA – System-of-Systems Analyst
TTP – Tactics, Techniques, and Procedures
UK – United Kingdom
U.S. – United States
U.S.-CREST – United States Center for Research and Education for Strategy and Technology
USJFCOM – United States Joint Forces Command
VPN – Virtual Private Network
XDJTFHQ – NATO Experimental Deployable Joint Task Force Headquarters

APPENDIX B - SENIOR CONCEPT DEVELOPER (SCD) PARTICIPATION AND SENIOR LEADER SEMINAR (SLS)

A. PURPOSE OF SCD PROGRAM

A significant element of warfighting experimentation is the participation of a select group of former general and flag officers and civilian equivalents. These individuals participate in a variety of activities as a source of experience and knowledge that contributes to the growing understanding of the concepts being examined during the experiment. In all cases, the intent is to use their knowledge, experience, expertise, and high-level influence to refine concepts used to transform the military forces for the future.

B. SUMMARY OF SCD EXPERIMENT PARTICIPATION

Given the multinational context of MNE 3, the 12 SCDs who participated in this experiment appropriately were from each of the participating nations: four from the United States, two each from Germany and the United Kingdom, and one each from Australia, Canada, France, and NATO. To use the richness of their individual and collective experiences and intellects to the fullest, they served as:

1. Senior advisors to the experiment director during Weeks 1 and 2
2. Senior observers and assessors during Weeks 1 and 2
3. Participants in four in-focus sessions
4. Participants in four participant seminars
5. Participants in two AARs
6. Authors of detailed written observations.

Additionally, four of the SCDs participated as role players within the experiment.

C. KEY EXPERIMENT EVENTS

The SCDs initially participated in 2 days of training, 20-21 January 2004 that included briefings on the concepts explored, SCD responsibilities, experiment objectives and construct, and the use of IWS as the collaborative tool to support experiment play. This time also allowed the SCDs to become acquainted with each other. This was considered to be important since they would be dispersed globally during the distributed experiment. Despite the brevity of their time together, they quickly engaged in several high-level discussions and made some major observations.

Besides observing collaborative activity of experiment players within the various IWS spaces, SCDs spent a significant portion of the first 2 weeks in collaboration among themselves. This generated a large volume of written material that has led to a clearer understanding of many multinational concept issues. These exchanges not only prepared the SCDs for and consequently enriched the in-focus sessions and participant seminars, but

they also laid some of the groundwork for the 3-day, post-experiment discussions from 1-3 March in preparation for the Senior Leader Seminar (SLS) on 5 March.

Two IWS in-focus sessions occurred each week to generate discussion about concept issues beyond the scope of the experiment. The topic and timing of each question were carefully coordinated with the COIs of the experiment activity at that time. These facilitated sessions encouraged "out-of-the-box" discussion that extended concept exploration.

The SCDs also participated in participant seminars. Like the in-focus sessions, these twice-weekly IWS conferences offered facilitated discussion. These forums allowed CTF leads and the NATO cell lead to explore concept issues beyond the scope of the experiment with the SCDs. The sessions also allowed another venue for SCDs to share their insights regarding the critical operational issues.

Two formally facilitated and teleconferenced AARs were conducted during the experiment, one at the end of each week. While the primary participants in the AARs included the CTF leads and NATO cell lead, the SCDs again were queried for their thoughts regarding observed strengths and weaknesses of the concepts as applied in the experiment.

D. SENIOR LEADER SEMINAR

Following MNE 3, Commander, USJFCOM hosted a SLS on 5 March at the Marine Barracks, Washington, DC. The purpose of the SLS was to facilitate discussion by military and civilian leaders at the four-star level (or equivalent) from the participating nations on significant, high-level observations that were related to the objectives and context of the experiment. In preparing for the SLS during 1-3 March, the SCDs identified three overarching themes that they believed emerged from the experiment and that are relevant to future multinational experimentation efforts. The three themes briefed to the leaders present were:

1. The effects-based approach to coalition planning in a CIE is essential and challenging – but doable. It poses new and significant interoperability challenges with promising opportunities.
2. The observations gleaned from this experiment have greater value and credibility because the EBP that was accomplished used a real-world scenario.
3. The use of a stability operations scenario in Afghanistan emphasized that they are inherently multinational and interagency and require a common doctrine.

The seminar topics that were discussed at the SLS had been selected by the SCDs during their 1-3 March deliberations. These topics included those preliminary, high-level observations arising from the experiment's in-focus sessions, participant seminars, and AARs and that were considered by the SCDs to be worthy of serious consideration by the seminar participants. Conducting EBP for stability operations was the context in which all the observations were made and discussed. The following were the topical headings for their observations:

1. Multinational EBO
2. Coalition ONA (Knowledge Base)

3. The Networked Coalition
4. Harmonize Nonmilitary Capabilities of Governments
5. Advanced and Continuous Political-Military Planning
6. Ensure Seamless Unity of Direction
7. Transition from Combat to Stability Operations
8. Adaptive Coalition Forces
9. Coalition Deployment, Employment, and Sustainment
10. Leader Competencies

Each topic that was discussed was introduced by two SCDs. One presented the topic's experimental context or subject background, the other followed with an overview of the key observations. At that point the facilitator presented the subject for discussion by the front table leadership. Because of the great interest in the subject matter, there was insufficient time to address all the topics, consequently only topics 1, 2, 4-6, and 10 were selected for review. Interestingly, the SCDs considered leader competencies to be of highest importance. It was discussed last only because its critical relevancy was dependent on understanding the content of the previous condition-setting topics (1-9). Just the same, its preeminence prompted the facilitator to finish the seminar discussions by allowing the SCDs to provide a brief explanation of its significance. It was clear that the senior leaders widely respected and accepted the observations that were presented to them during this 2 ½-hour event.

E. AN EFFECTS-BASED APPROACH TO STABILITY OPERATIONS

Process, organization, and technology issues were addressed as main objectives of the experiment. Underlying objectives also included detailed discovery of concept issues that were facilitated through in-focus sessions and participant seminars centered on an EBO approach to stability operations. All sessions and seminars kept topics grounded in post conflict stability operations and were relevant to the experiment.

The in-focus sessions and participant seminars examined primary areas of stability operations: multinational operations, interagency operations, coalition and interagency actions, and information sharing. Key observations and issues from sessions were synthesized every 2 days after the completion of a set of sessions covering strategic and operational level issues. These synthesized points were further broken down into key observations for further discussion at the SLS. The high-level points discovered as a result of this synthesis are summarized here.

An entirely new level of complexity is introduced when jumping into the realm of multinational operations within the stability operations arena. Political-military planning, elements to enable multinational operations, and leadership competencies were all major issues discussed within MNE 3 and have a major impact upon multinational operations. A strategic framework is needed to provide the proper structure in a coalition operation. Political-military planning can provide that essential structure by setting national and coalition strategic aims and objectives, breaking down missions and tasks, and by establishing

accountability. The main challenge for this planning is to define the link between strategic and operational levels. The political-military plan has the potential to give the military commander the strategic guidance required to develop a military plan coherent with nonmilitary elements of government.

Several elements must be considered that will enable smoother multinational operations prior to reaching the timeframe when a political-military plan would be required. They include common and updated documentation, multinational operations training, closing interoperability gaps in technology, awareness of cultural sensitivities, standardized procedures for transfer of operational control, and standard coalition terminology. All MNE 3 countries participating agreed integration in the near term is difficult. Interoperability would be a more realistic goal due to international and domestic politics, resource constraints, cultural practices, and technological interfaces.

Certain leader competencies may also be categorized as an element that will enable smoother operations. Traditional leadership principles will continue to have relevance in the future CIE. However, there are issues that will influence how effective leadership is exercised. Leaders at all levels need cultural sensitivities gleaned through training, education, and experience. These competencies must be further enhanced in the collaborative environment through the development of facilitation skills, adaptability, flexibility, and mental agility. Flexibility and adaptability are not only essential for leader competencies, but they are also a key element for efficiently and effectively harmonizing coalition interagency operations. Early engagement, based upon habitual relationships of nonmilitary instruments of power, is essential. Autonomy is needed since civilian agencies routinely have regional presence in theater prior to the onset of combat operations. Civilian agencies provide continuity during transitions and are more focused on long-term solutions. A large amount of expertise is resident within NGOs, often external to the CTF, and this resource should be used in the design of actions and effects, the design of methods for assessments, and interpreting results. One solution is the development of a policy that facilitates participation of NGOs but honors their autonomy and neutrality.

A clear definition of civil and military leadership is needed to truly harmonize coalition interagency actions. Just as a military commander should lead during combat operations, a qualified civilian should lead during stability operations. A designated civilian authority should be involved from the outset of contingency planning to achieve a seamless transition from combat operations to post-combat stability operations. This will require the military commander to be adaptable during the transition. Requirements for an adaptive coalition force include the ability to step up and down the spectrum of conflict – task organized and trained for combat operations as well as stability operations. An adaptive force should focus on common will, understanding, and leadership, as well a common knowledge base for shared situational awareness. It also requires familiarity with the culture and circumstances for the area of operations. Ultimately, an adaptive coalition force will require a shift in training that focuses on the individual soldier and decentralized operations.

The problem of MNIS is a recurring theme for coalition building. A common discussion thread throughout all of the sessions and seminars in MNE 3 was the importance of establishing policies, procedures, and technologies to enable MNIS. The utility of the

coalition knowledge base is dependent upon nations being able to share relevant data. Consensus among all nations showed that MNIS is hindered by restrictive national policies and politics. The unrestricted flow of information also has a direct impact upon the success of other concepts such as Multidomain Operational Net Assessment and Joint Intelligence Surveillance and Reconnaissance. A common theme amongst comments revealed a dichotomy associated with the requirement for an unrestricted flow of information within a networked coalition and national requirements for security. A key takeaway from the experiment was the need for mixed collaborative methods that capture the benefits of face-to-face and virtual interaction, thus better enabling EBP in a coalition environment.

The idea of coalition force projection emerged with regard to stability operations. The key question of force projection is how to incorporate logistics planning into the earliest stages of coalition building. The challenges of centralized control of coalition logistics include the nations' reluctance to cede control of troop welfare, as well as national fiscal policy constraints. Nations must also recognize there may be a tendency for nontraditional coalition members to place large resource burdens on the lead nation(s). Sharing resources across the coalition raises difficult financial considerations. To minimize the ensuing logistic impact placed on host nations, one possible solution is sea basing, which can reduce the coalition footprint. Through the incorporation of coalition logistics in exercises, experiments, and wargames, additional remedies pertaining to coalition force projection will be discovered.

SCDs also discussed spoilers as a key concept from the Stability Operations Joint Operating Concept, as spoilers deserve special recognition and emphasis in the planning process. Spoilers are agents, organizations, or factions that threaten the success of stability operations. The concept of spoilers is divided into three distinct groups: total, limited, and greedy. This division is a unique characteristic of stability operations. Discussions made it clear that tailored strategies and capabilities are required to defeat each group of spoiler. Furthermore, emphasis was given on the number of spoilers varying dependent on level of instability.

As indicated above, MNE 3 enabled detailed discovery in several conceptual areas. These discoveries will allow for further improvement of several concepts as well as allow for improvement in several prototype areas indicated by the main objectives of MNE 3. A quotation from the past by General Richard Myers, the Chairman of the Joint Chiefs of Staff, summed this up best when he stated that "improvement will require not only technological solutions, but also cultural change – a willingness to challenge standard practices, and question current organizational patterns and command practices."

APPENDIX C - INITIAL DISTRIBUTION LIST

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